

REMARKS

The Office Action dated December 31, 2003, has been received and carefully noted. The amendments made herein and the following remarks are submitted as a full and complete response thereto.

Claims 5 and 13 have been amended, and claims 1-4, 6-12 and 14-16 have been cancelled without prejudice. Applicant submits that the amendments made herein are fully supported in the specification and the drawings as originally filed, and therefore no new matter has been added. Accordingly, claims 5 and 13 are pending in the present application and are respectfully submitted for consideration.

As a preliminary matter, claims 1-4, 6-12 and 14-16 have been canceled without prejudice, and therefore the rejections noted in the pending Office Action with respect to these claims are now moot.

Claims 1, 5, 9, and 13 were rejected under 35 U.S.C. § 112, second paragraph, as being indefinite. Applicant highlights at least pages 15-17 of the present specification as well as Figure 6 of the drawings which sufficiently describes the input-output characteristics of the gamma correction circuit to enable one of ordinary skill in the art to ascertain the scope of the invention. In addition, it is submitted that claims 5 and 13 have been amended to more particularly recite the subject matter of the present invention, and therefore overcome the formal rejection noted in the Office Action. Thus, claims 5 and 13 are in compliance with U.S. patent practice.

Claims 9, 11, 13, and 15 were rejected under 35 U.S.C. § 102(b) as being anticipated by Kaburagi et al. (U.S. Patent No. 6,160,532, "Kaburagi"). Applicant respectfully traverses this rejection.

It is submitted that the rejection of claim 13 under 35 U.S.C. § 102(b) is improper. In other words, a proper rejection under § 102(b) requires that the prior art be "patented or described in a printed publication ... more than one year prior to the date of the application for patent in the United States." The filing date of the present application is August 16, 2001, and the patent date of Kaburagi is December 12, 2000, which is not more than one year prior to August 16, 2001. Therefore, Applicant submits that Kaburagi is improper cited art under § 102(b), and requests that the rejection be withdrawn.

Claims 1, 3, 5, and 7 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Kaburagi as applied to claims 9 and 13, and further in view of Applicant's Admitted Prior Art ("AAPA").

Claim 5 recites a liquid crystal projector comprising an analog gamma correction circuit to make input signal level-to-illuminance characteristics linear, wherein a digital gamma correction circuit for changing gamma correction characteristics with variable input-output characteristics is provided in a stage preceding the analog gamma correction circuit, in which the input-output characteristics of the digital gamma correction circuit are varied according to a characteristic changing instruction from a user, and the input-output characteristics of the digital gamma correction circuit are indicated by an exponential equation whose exponent is variable.

Accordingly, at least one of the essential features of the present invention is "a digital gamma correction circuit for changing gamma correction characteristics with variable input-output characteristics is provided in a stage preceding the analog gamma correction circuit, in which the input-output characteristics of the digital gamma correction circuit are varied according to a characteristic changing instruction from a user." As such, the present invention results in the advantage where a user can change the input signal level-to-illuminance characteristics of a liquid crystal projector in an easy and efficient manner.

It is respectfully submitted that the prior art fails to disclose or suggest the elements of the Applicant's invention as set forth in claim 5, and therefore fails to provide the advantages that are provided by the present application.

Kaburagi discloses a primary gamma correction circuit 24 that is connected via a switch 22 on the downstream side of frame memory 20. When the data from the frame memory 20 is data input by means of the first input terminal 12, switch 22 outputs the data to the primary gamma correction circuit 24. R, G, B digital image data, which is CCD camera output, is also input to the primary gamma correction circuit 24 in the same manner. On the other hand, when the data from frame memory 20 is data input via second input terminal 14, switch 22 supplies the data via bypass line 26 directly to dedicated liquid crystal display boards 30R, 30G, 30B without supplying that data to the primary gamma correction circuit 24.

Kaburagi also discloses a secondary gamma correction circuit 32 disposed to dedicated liquid crystal display board 30R.

The gamma correction of Kaburagi is separated into two operations. The first gamma correction operation is referred to as "primary gamma correction," and the second correction operation is referred to as "secondary gamma correction." Primary gamma correction is the operation whereby reverse gamma correction is applied to restore image data that has been gamma corrected primarily for a CRT to the original data before gamma correction for a CRT. This primary gamma correction operation therefore differs from the secondary gamma correction operation in that the correction data can be determined with no relationship to the characteristics of an individual liquid crystal panel. The purpose of this primary gamma correction is only to remove gamma correction for a CRT; when image data that has not been gamma corrected for a CRT is input, bypass line 26 can be used as it is not necessary to pass the primary gamma correction circuit 24. If image data that has been gamma corrected for a CRT is, however, always input, a further function for correction according to one region (the white level side, for example) of the T-V characteristic can be added to the primary gamma correction circuit 24.

AAPA discloses a conventional liquid crystal projector comprising an analog gamma correction circuit 5.

Applicants respectfully submit that each and every element recited within claim 5 is neither disclosed nor suggested by Kaburagi or Aapa, taken alone or in combination. In particular, Applicants submit that the liquid crystal projector as recited in the present application is clearly distinct from that which is illustrated by the combination of the cited prior art. Specifically, it is submitted that the cited prior art fails to disclose or suggest at

least the limitation of "a digital gamma correction circuit for changing gamma correction characteristics with variable input-output characteristics is provided in a stage preceding the analog gamma correction circuit, in which the input-output characteristics of the digital gamma correction circuit are varied according to a characteristic changing instruction from a user".

According to one example of the present invention, when the input/output characteristics of the digital gamma correction circuit for changing gamma correction characteristics are changed in accordance with the characteristic changing instruction from a user, the gamma correction characteristic is changed. Since the input/output characteristics of the digital gamma correction circuit for changing gamma correction characteristics are indicated by an exponential equation whose exponent is variable, the input/output characteristics of the gamma correction circuit can be readily changed.

In contrast, the first gamma correction circuit 24 of Kaburagi is to apply inverse gamma correction to image data that has been gamma corrected for a CRT to restore the original data before gamma correction for a CRT. Specifically, the first gamma correction circuit 24 of Kaburagi is not designed to change its input/output characteristics based on a characteristic changing instructions from a user.

Accordingly, Applicant submits that Kaburagi or AAPA fails to disclose or suggest each and every element recited in claims 5 and 13 of the present application, and therefore are allowable.

Claims 2, 4, 6, and 8 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Kaburagi and Admitted Art as applied to claims 1 and 5 above, and

further in view of Takayama (U.S. Patent No. 6,317,157, "Takayama"). Claims 10, 12, 14, and 16 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Kaburagi and Admitted Art as applied to claims 1 and 5, and further in view of Takayama. It is submitted that these rejections are now moot.

In view of the above, Applicants respectfully submit that each of claims 5 and 13 recites subject matter that is neither disclosed nor suggested in the cited prior art. Applicants also submit that the subject matter is more than sufficient to render the claims non-obvious to a person of ordinary skill in the art, and therefore respectfully request that claims 5 and 13 be found allowable and that this application be passed to issue.

If for any reason, the Examiner determines that the application is not now in condition for allowance, it is respectfully requested that the Examiner contact the Applicants' undersigned attorney at the indicated telephone number to arrange for an interview to expedite the disposition of this application.

In the event this paper has not been timely filed, the Applicant respectfully petitions for an appropriate extension of time. Any fees for such an extension, together with any additional fees that may be due with respect to this paper, may be charged to counsel's Deposit Account No. 01-2300 referencing Attorney Docket No. 107314-00025.

Respectfully submitted,



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Enclosure: Petition for Extension of Time (1 month)